Intelligent VRT controller

for variable rate liquid fertilizer applicator

- mature oil palm plantation & other tree crops

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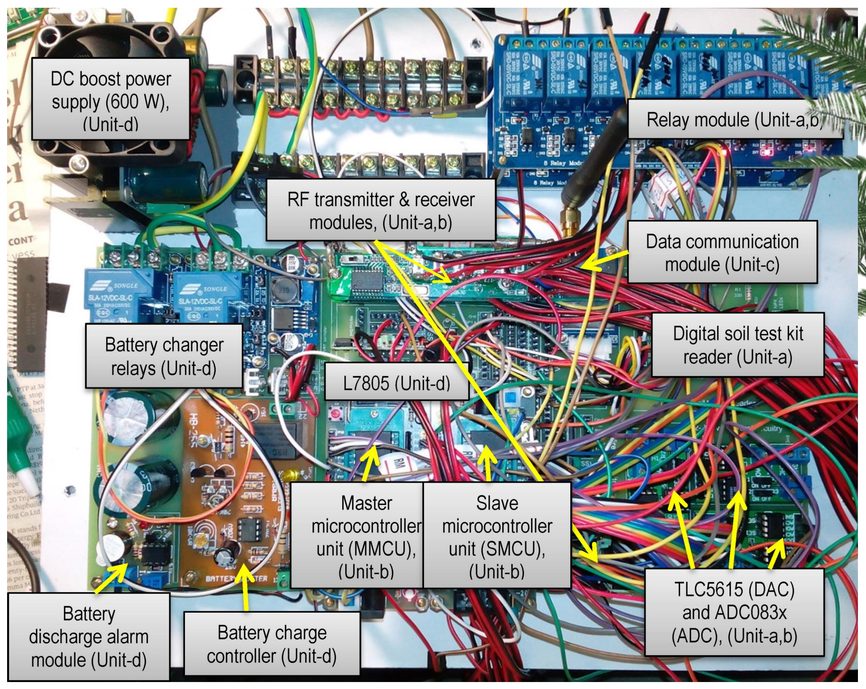

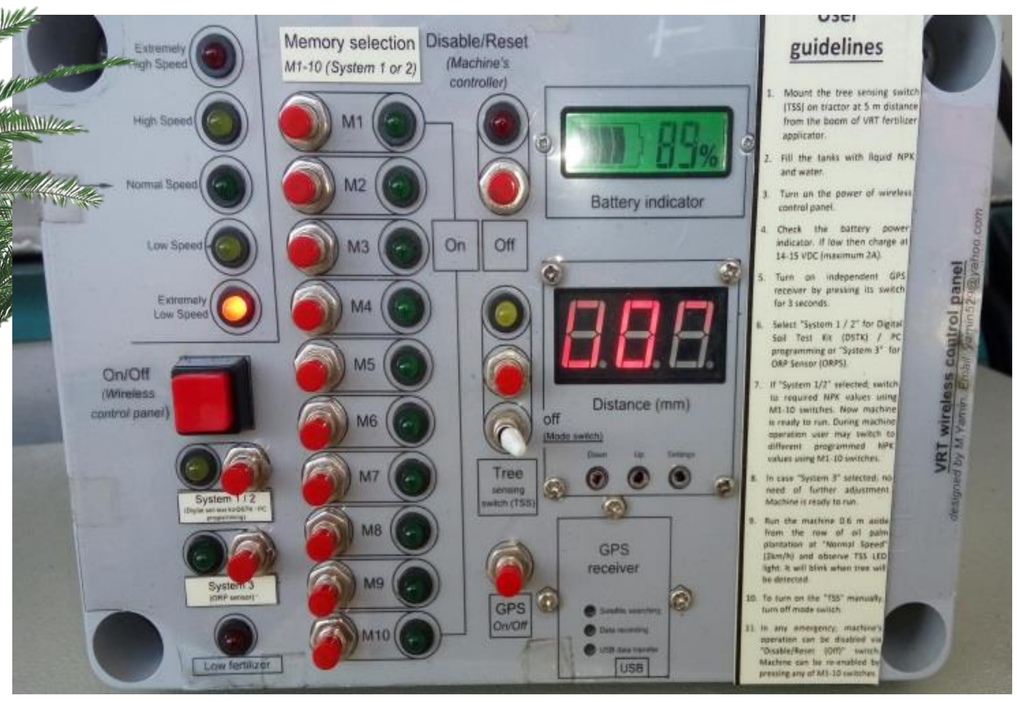

BRIEF TECHNOLOGY

This invention is about Intelligent VRT controller works to monitor NPK status of soil and make the decisions itself to control the fertilizer application at variable rates for the operation of variable rate liquid fertilizer applicator. It can handle NPK straight fertilizers (urea-46 % N, triple super phosphate-46 % P_2O_5, murate of potash-60 % K_2O) in water soluble form and can vary the application rate of these fertilizers individually according to the respective nutrient's requirement of plant.

PROBLEM STATEMENT /CURRENT ISSUES

- Currently, the operation of variable fertilizing control system is supervised by a computer connected to the VRT controller for inputting the fertilizer information. Thus information of fertilizer application rate required by the controller cannot be fed without computer system.
- Existing old controllers can handle only one fertilizer (straight/blended or compound) and cannot control the application rates of N, P and/or K fertilizers simultaneously.
- Mostly available controllers work only for continuous application of fertilizer and cannot be used for tree cops which requires spot application of fertilizer around the tree only, for effective fertilizer use efficiency.
- Currently, available controllers have no facility to save or transmit the fertilizer application and other necessary information for the development of field record for better nutrient management.

INVENTIVENESS & NOVELTY

- In presented invention, VRT controller was designed to monitor the NPK status of oil palm plantation using its three NPK monitoring systems.
- VRT controller can calculate the deficiency of NPK nutrients by comparing NPK status of soil with the reference NPK requirement of oil palm stored in it.
- Based on the calculated deficiency of NPK, controller itself decides to set the N, P and K fertilizers application rates intelligently without need of external computer or digital nutrient mapping system.
- To ensure precise application of NPK fertilizers, this intelligent controller monitors the set flow rates of NPK fertilizers continuously.

USEFULNESS & APPLICATION

- Intelligent VRT controller is installed with variable rate liquid fertilizer applicator for mature oil palm plantation to make its operation automatic.
- With programs modification, this intelligent VRT controller has potential to operate with VRT liquid fertilizer applicators for other tree and cereal crops.

ADVANTAGES OF THE INVENTION

- Uses multiple soil fertility information input systems.
- Intelligent system calculates deficiency of NPK in the soil for oil palm.
- Controls the accurate application of liquid NPK fertilizers.
- Helps to fulfill the need of oil palm fertilizer requirements.
- Transmits fertilizer application data to remote recording station wirelessly up to 1-2 km far.

MARKET POTENTIAL

- Global Precision Agricultural market size is ~3.54 billion USD.
- As a component of Precision Agriculture, this system has a good market potential in many countries like Malaysia, Indonesia, Thailand, Colombia, Nigeria, Ecuador, Guatemala, Honduras, Papua New Guinea.

TRL 7-Demonstration of prototype

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